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Materials Science and Engineering

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I/3

One – pot synthesis of hydrophobic hydroxyapatite nano particles

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A highly hydrophobic oleic acid functionalized hydroxyapatite nanoparticles were obtained by the solvothermal method. Water solutions of reactants were added in mixture of oleic acid, triethanolamine and ethanol, which was then treated in Teflon lined autoclave. The chemical composition, size and morphology of as obtained particles were determined using XRD, FT IR, FE SEM and LD PSA. In addition, sintering behaviour and microstructure of prepared material were also examined.

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Synthesis and the effect of processing parameters on characteristics of poly-ε-caprolactone micro- and nanospheres

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Poly-ε-caprolactone (PCL) is a semicrystalline, biodegradable and biocompatible polymer. Its advantages, as high permeability to small drug molecules, failure to generate an acidic environment during degradation (as compared to polylactides and polyglycolides) and a slow degradation rate, make this aliphatic polyester suitable for extended long-term delivery over a period of more than one year. In this study PCL particles were prepared by physicochemical method with solvent/non-solvent systems. The synthetic polymer polyvinylpyrrolidone (PVP) and natural polymer poly (α, γ, L-glutamic acid) (PGA), were used as stabilizers and their influence on size and morphology of the particles was examined. The results were compared with those obtained without the use of stabilizers. Characterization of obtained particles was performed by Fourier transform infrared spectroscopy. The morphology and size distribution were determined using SEM and particle analyzer.